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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,149	08/06/2001	Steven C. Tankersley	P4839-001	8984

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EXAMINER

KIKNADZE, IRAKLI

ART UNIT PAPER NUMBER

2882

DATE MAILED: 07/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,149

Applicant(s)

TANKERSLEY, STEVEN C.

Examiner

Irakli Kiknadze

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9 is/are allowed.
- 6) ☒ Claim(s) 10-20 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Response to the Final Office Action of March 28, 2003 has been received on May 29, 2003 and has been entered. Applicant's request for reconsideration of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

2. Applicant's arguments, see pages 1-5, filed May 29, 2003, with respect to claims 1-9 have been fully considered and are persuasive. The rejection of claims 1-9 has been withdrawn.

Applicant's arguments with respect to claims 10-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claim 12 is objected to because of the following informalities: a radiated source, a radiated signal and a detector already have been disclosed in claim 10. Examiner assumes that they are same elements and should be addressed as the/or said source, signal and detector. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

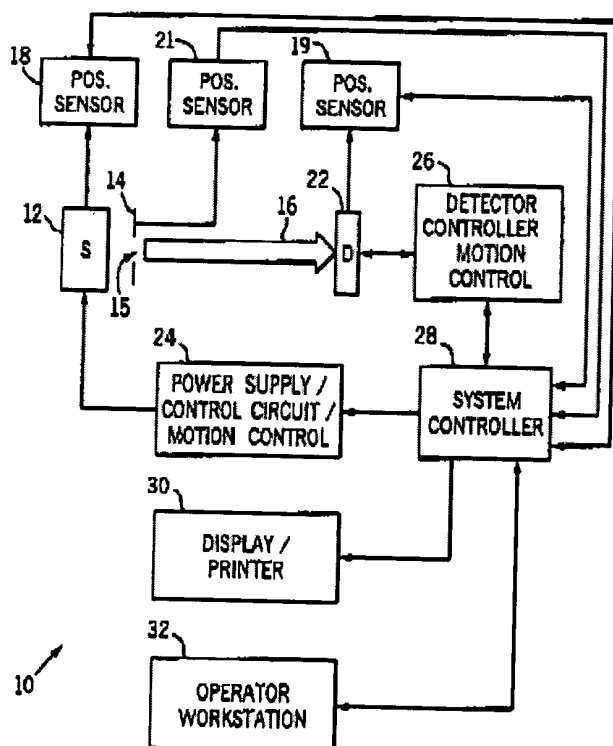
A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 17 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Polkus et al. (US Patent 6,435,716 B1).

With respect to claims 17 and 19, Polkus discloses (Fig. 1) a radiographic imager



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(10), comprising: an image receptor (22); an x-ray source (12) spaced from the image receptor (22); and a radiated signal source (18; 19) for determining the distance between the image receptor (22) and the x-ray source (12). The radiated signal source is taken from the group including a laser beam source, an ultrasonic signal source, a magnetic field source, and an RIF electromagnetic signal source (column 4; line 25 – column 6; line 16).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

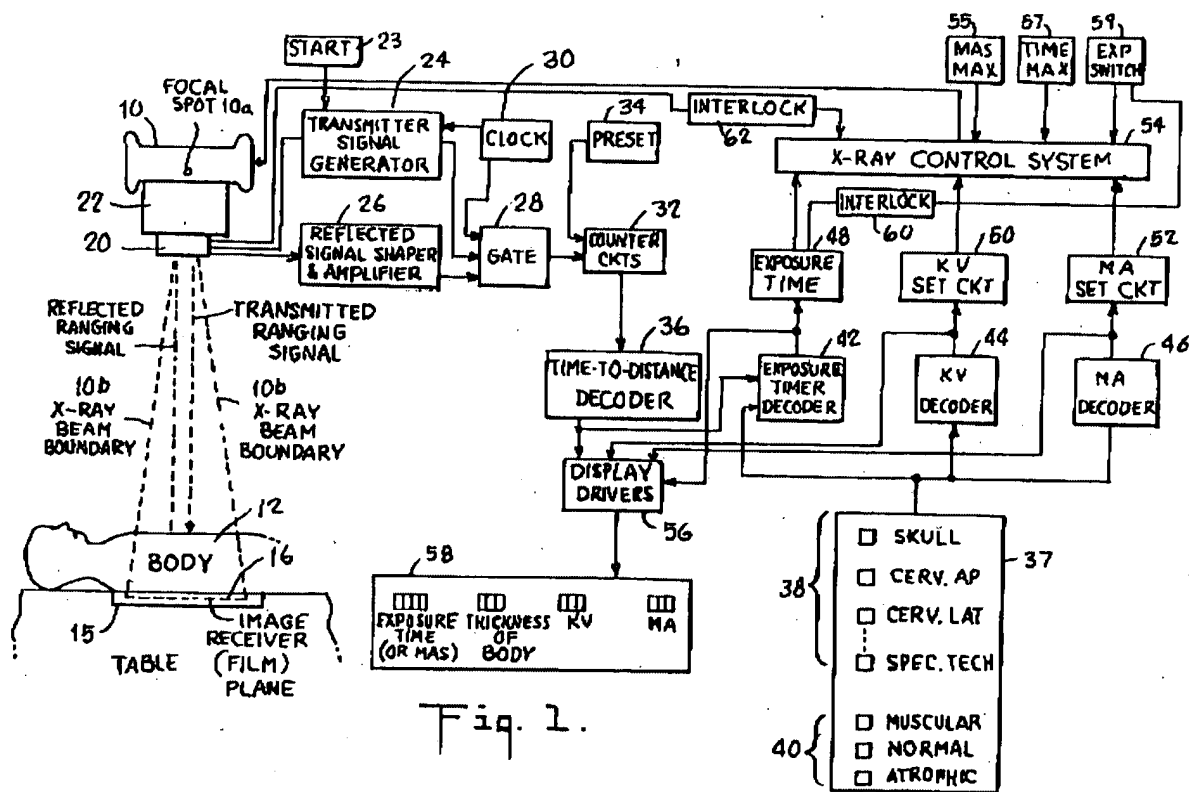
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10,11 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Kleinman (US Patent 4,597,094).

With respect to claims 10,11 and 15-20, Kleinman discloses (Fig.1) a radiographic imager, comprising: a collimator housing (22) containing a radiation beam source (10); an image receptor (15) for receiving radiation and responsively forming a diagnostic image; and a measuring device (36) operative to determine the distance between the collimator housing (22) and a body (12) by calculating the travel time of a radiated signal directed from a transducer (20) performing as a radiated signal source reflected back to transducer (20) performing as a detector, the radiated signal source/detector (20) affixed to the collimator housing and positioned in a known spatial

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relationship with the image receptor (15). The radiographic imager further comprises a switch (23) for toggling the radiated signal source (20) between an operative and an inoperative condition (column 3; line 29 – column 4; line 18).



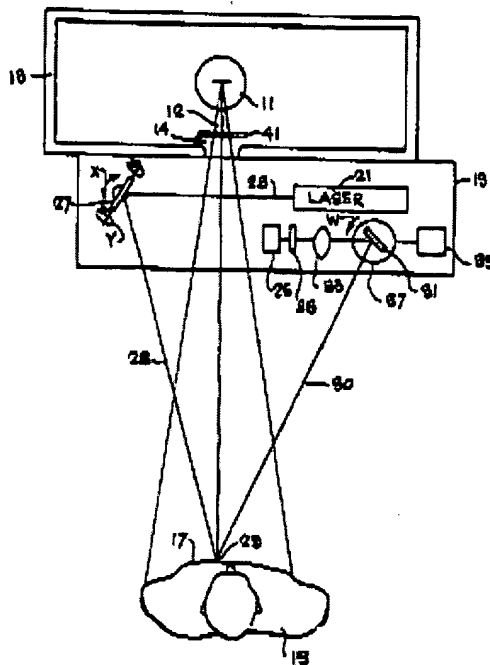
The radiated signal source (20) is an ultrasonic signal source (column 3; lines 47-62). The radiographic imager includes a display (56) to display the measured distance between the radiation beam source (10) and the body (12) (column 6; lines 15-20).

Kleinman discloses, that the distance between X-ray source (10) with collimator housing (22) and the image receiver (15) is known or can be determined (column 3; line 37), furthermore there is disclosed a counter circuit (32) with a count corresponding to

the two-way travel time between transducer (20) and surface of a table where the image receiver (15) is positioned. Kleinman doesn't specify how to measure the distance between the radiation source (10) and the image receiver (15). It would have been obvious to one ordinary skill in art at the time invention was made to measure the distance between the radiation source with collimator housing and the image receptor with the Kleinman's imager, counting the two-way travel time between transducer and image receptor (without the body) and determining the distance with time-to-distance decoder (36) because it would allow one to precisely position, with a large degree of variations in the configuration, the radiation source beam and the image receptor.

8. Claims 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saunders (US Patent 4,896,343).

9. With respect to claims 10-20, Saunders discloses a radiographic imager (Fig.1), comprising: a collimator housing (13) containing a radiation beam source (11); and a measuring device (19) operative to determine the distance between the collimator housing (13) with radiation source (11) and target surface (17) by calculating the travel time of a radiated signal directed from a radiated signal source (21) to a detector (25), the radiated signal source (21) affixed to the collimator housing (13) with X-ray source (19) and the detector (25) positioned in a known spatial relationship with the source (21). The measuring device (19) comprises the radiated signal source (21) for emitting the radiated signal (23) and the detector (25) spaced from the radiated signal source (21) (column 3; lines 12-64).



The radiographic imager includes a circuit operatively associated with a radiated signal source (21) and the detector (25) for the determining the distance between the radiation beam source (11) and target surface (17). The circuit is operative to determine the travel time of a radiated signal passing from the radiated signal source to the detector. The radiated signal source is a laser beam source (column 3; lines 40-60).

Saunders also discloses a radiographic apparatus with determining distance from the radiation source with collimator housing to the target surface, even creates a three-dimensional topographic surface map. It would have been obvious to one ordinary skill in art at the time invention was made to measure the distance between the radiation source with collimator housing and an image receptor (or any other component, surface or element for radiation apparatus) with the Saunders apparatus because it would allow

one to precisely position, with a large degree of variations in the configuration, the radiation source beam and the image receptor.

Allowable Subject Matter

10. Claims 1-9 are allowed.

11. The following is a statement of reasons for the indication of allowable subject matter: Claims 1-7 are allowed because prior art fails to disclose or make obvious a radiographic imager having a measuring device comprising: a radiated signal source positioned at one of an X-ray source or image receptor to project a radiated signal; a detector positioned at the other one of the x-ray source or image receptor associated with the radiographic imager to detect the radiated signal; and a circuit operative to determine the travel time of the radiated signal between the X-ray source and the image receptor, and thereby determine the distance between the x-ray source and the image receptor, as claimed in claim 1. Claims 2-7 are allowed by virtue of their dependence.

Claims 8 and 9 are allowed because prior art fails to disclose or make obvious a method of determining the distance between an X-ray source and an image receptor associated with a radiographic imager, comprising: projecting a radiated signal from one of the x-ray source or the image receptor; detecting the projected signal at the other of the x-ray source or image receptor associated with said radiographic imager; and determining the distance between the X-ray source and image receptor based on the

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travel time of the radiated signal, as claimed in claim 8. Claim 9 is allowed by virtue of its dependence.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Boomgaarden (US Patent 6,402,374 B1) and Smith et al. (US Patent 6,282,264 B1) disclose methods and systems for determining a source-to-image distance in radiographic systems. Ohmamyuda et al. (US Patent 5,239,353) discloses optical distance measuring apparatus. Badano et al. (US Patent 6,167,292) discloses ultrasound measurement systems used in 3D measurement application during radiological examination.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is (703) 305-6464. The examiner can normally be reached on M-F(8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Irakli Kiknadze
June 25, 2003


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